<u>We Claim:</u>

1. A method for the ablation of a surface on a rotating drum having an axis, which comprises:

locating a number of laser fiber exits beside one another in an AOM array having a number of AOMs corresponding to the number of laser fiber exits;

simultaneously emitting a plurality of laser beams from the laser fiber exits;

dividing up each of the laser beams into at least two partial beams after the laser beams emerge from the laser fiber exits;

modulating the partial beams independently of one another;

imaging the laser fiber exits on the surface of the drum, with an optical system; and

laser engraving the surface with the multi-spot array by moving the laser fiber exits, the AOM array, and the optical system together in an axial direction of the drum while scanning the surface with the multi-spot array in a circumferential direction of the drum.

2. The method according to claim 1, wherein the surface is a film.

3. The method according to claim 1, wherein the surface is a printing plate.

4. The method according to claim 1, wherein the printing plate is a flexo printing plate.

5. The method according to claim 1, wherein the laser fiber exits are YAG laser fiber exits.

6. The method according to claim 1, which further comprises deflecting all of the partial beams in a direction of the drum such that points of incidence of the partial beams lie beside one another in a line on the surface and partly overlap adjacent points of incidence.

7. The method according to claim 1, which further comprises carrying out the dividing step by applying voltage signals with at least two different frequencies to each AOM.

8. The method according to claim 7, which further comprises carrying out the applying voltage signals step by applying the voltage signals to the AOM with a time offset to cause the at least two partial beams to strike the surface in a line as a

result of a rotation of the drum and to partly overlap the points of incidence of the partial beams.

9. The method according to claim 1, wherein the optical system has an entry pupil, and which further comprises aligning the laser fiber exits to converge in a fan shape such that in each case some of the partial beams intersect in a vicinity of the entry pupil.

10. The method according to claim 9, which further comprises aligning the partial beams in a fan shape to cover at least two planes, the points of incidence of the partial beams on the surface in each plane respectively lying on an axis forming an angle α with the axial direction of the drum, where arctan $\alpha = lx/2ly$:

lx being a center spacing of the points of incidence in a direction of the axes; and

ly being a center spacing of the points of incidence in a direction perpendicular to the axes.

11. The method according to claim 1, which further comprises substantially telecentrically imaging the laser fiber exits on the surface with the optical system.

12. The method according to claim 9, which further comprises substantially aligning the partial beams in parallel downstream of an exit pupil of the optical system with respect to a travel direction of the partial beams and deflecting the partial beams onto the surface.

13. The method according to claim 1, wherein the partial beams have an angular spacing and each have a diameter, and which further comprises widening the diameter of the partial beams and reducing the angular spacing of the partial beams in the optical system.

14. A multibeam scanning device for the ablation of a surface on a drum by laser engraving with a multi-spot array, the drum being rotatable about an axis of rotation, the device comprising:

a number of laser fiber exits disposed beside one another;

an AOM array having a number of AOMs corresponding to said number of said laser fiber exits, said AOM array connected to said laser fiber exits, said AOMs receiving laser beams emerging from said laser fiber exits, said AOM array dividing up each of the laser beams into at least two partial beams each modulated independently of one another;

an optical system for imaging said laser fiber exits at the surface on the drum, said optical system disposed downstream of said AOM array with respect to a travel direction of the laser beams; and

said laser fiber exits, said AOM array, and said optical system forming a multi-spot array and being moveable together in a direction of the axis of rotation of the drum while the surface is scanned by said AOM array in a circumferential direction of the drum.

15. The multibeam scanning device according to claim 14, wherein:

the partial beams have points of incidence; and

the points of incidence of all of the partial beams lie beside one another in a line on the surface and partly overlap adjacent points of incidence.

16. The multibeam scanning device according to claim 14, including voltage signal devices connected to said AOMs and applying voltage signals having at least two different frequencies to each of said AOMs to divide up the laser beams into the at least two partial beams.

17. The multibeam scanning device according to claim 15, wherein:

the partial beams cover two or more planes; and

the points of incidence on the surface in each plane respectively lie on an axis forming an angle α with the axis of rotation of the drum, where $\arctan \alpha = lx/2ly$:

> lx being a center spacing of the points of incidence in a direction of the axes; and
>
> ly being a center spacing of the points of incidence in a direction perpendicular to the axes.

18. The multibeam scanning device according to claim 14, wherein:

said optical system has an entry pupil; and

said laser fiber exits are aligned to converge in a fan shape and to have some of the partial beams intersect in a vicinity of said entry pupil.

19. The multi-beam scanning device according to claim 18, wherein the partial beams downstream of said exit pupil with

respect to a travel direction of the partial beams are aligned substantially parallel to one another.

20. The multibeam scanning device according to claim 18, wherein said AOM array is disposed between said laser fiber exits and said entry pupil.

21. The multibeam scanning device according to claim 18, wherein:

said AOMs have converters; and

an alignment of said converters corresponds to an alignment of convergent ones of the laser beams.

22. The multibeam scanning device according to claim 14, wherein said optical system images said laser fiber exits substantially telecentrically on the surface.

23. The multibeam scanning device according to claims 14, wherein:

the partial beams have an angular spacing and each have a diameter; and

said optical system has a beam expander widening the diameter of the partial beams while reducing the angular spacing of the partial beams.

24. The multibeam scanning device according to claim 14, wherein said laser fiber exits are YAG laser fiber exits.

25. A multibeam scanning device for the ablation of at least one of film and printing plates, the printing plates including flexo printing plates, disposed on a surface of a rotating drum by laser engraving with a multi-spot array, the drum being rotatable about an axis of rotation, the device comprising:

a number of laser fiber exits disposed beside one another;

an AOM array having a number of AOMs corresponding to said number of said laser fiber exits, said AOM array optically connected to said laser fiber exits, said AOMs receiving laser beams emerging from said laser fiber exits, said AOM array dividing up each of the laser beams into at least two partial beams each modulated independently of one another;

an optical system disposed downstream of said AOM array with respect to a travel direction of the laser beams for imaging

said laser fiber exits on one of the film and printing plate; and

said fiber exits, said AOM array, and said optical system forming a multi-spot array and being moveable together in a direction of the axis of rotation of the drum while one of the film and printing plate is scanned by said AOM array in a circumferential direction of the drum.